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# EVALUATION OF THE SOUTHERN PINE BEETLE INFESTATIONS ON THE OAKMULGEE DISTRICT, TALLADEGA NATIONAL FOREST, ALABAMA

by

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## INTRODUCTION

An aerial photographic and aerial sketch map survey was conducted on the Oakmulgee District (320,000 acres) during June 1974. The survey was performed by the Forest Pest Management Group to determine the current status and trend of the southern pine beetle populations on this District.

The southern pine beetle infestations on this District are part of a southwide outbreak involving 10 states. The current outbreak was first observed on this forest in January 1972 (See Figure 1).

## METHODS

A seven percent aerial photographic survey, utilizing 200 acre sample plots, was performed in accordance with Southeastern Area guidelines[1/]. Because of inclement weather, the southeastern portion of the District was surveyed utilizing the standard 50 percent aerial sketch map survey[2/] (Figure 2).

Sixteen of the spots detected during the aerial phase of the evaluation were examined on the ground to confirm cause of mortality, percent of active spots, and to assess the general condition of beetle populations.

## TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis* Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda* L., and shortleaf pine, *P. echinata* Mill., are the preferred hosts.

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1/ Evaluating Southern Pine Beetle Infestations, 1970, USDA, USFS, SA. S&PF, Div. of FPM, Pub. FPM-8, Atlanta, Ga., 35 pp.

2/ Detection of Forest Pests in the Southeast, 1970, USDA, USFS, SA, S&PF, Div. of FPM, Pub. S&PF-7, Atlanta, Ga., 51 pp.

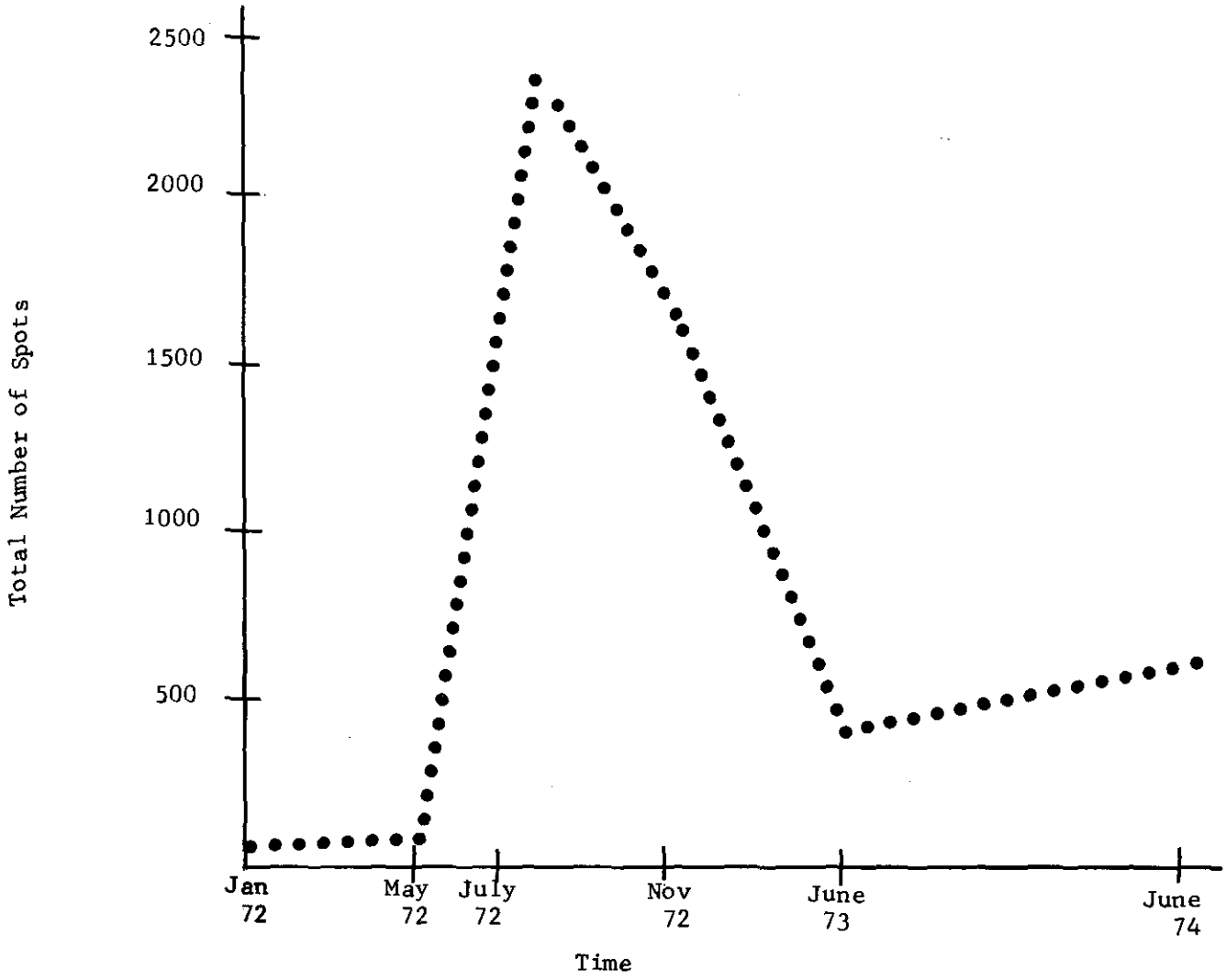


Figure 1.--Illustration of the trend of the current southern pine beetle outbreak in terms of total number of spots detected on the Oakmulgee District, Talladega National Forest, Alabama.

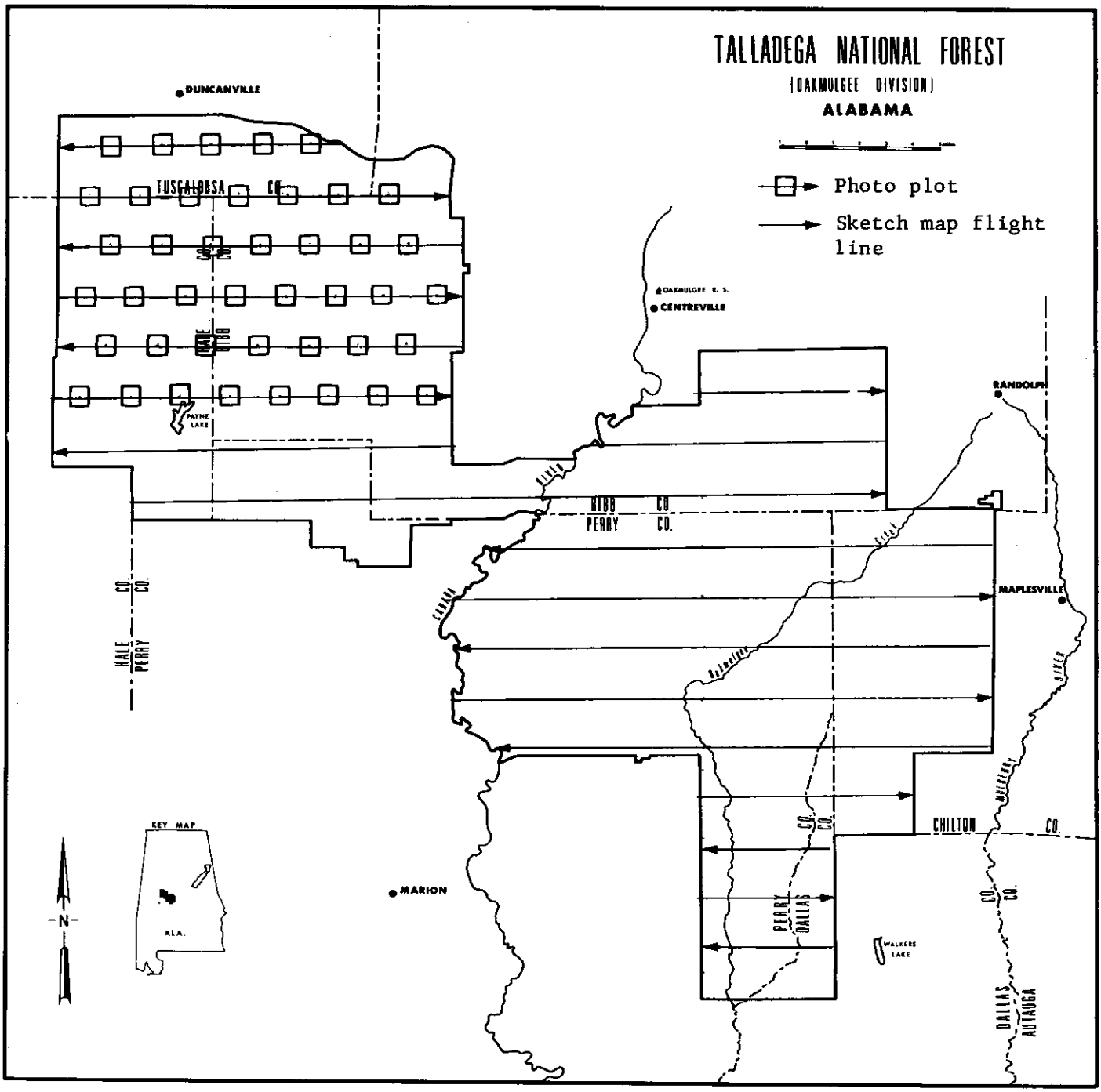


Figure 2.--Aerial photographic and sketch map survey on the Oakmulgee District, Talladega National Forest, Alabama, June 1974.

Type of Damage - Death of the tree is the result of cambial mining by the southern pine beetle as it constructs its gallery. The beetle also introduces the blue stain fungi, *Ceratocystis* spp., which slows down or blocks conduction of water in the stem.

Life cycle of the beetle - The beetles attack in pairs and construct a winding gallery in the cambial region. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the inner bark and then construct cells in the bark for pupation. The callow adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer and as many as seven generations may be produced in a year.

## RESULTS AND DISCUSSION

The southern pine beetle populations are at relatively low levels (.77 infested trees per M acres host type) in comparison with June 1973 (3.00 infested trees per M acres host type).

Tables 1 and 2 summarize the results for the District. The following is a narrative discussion of the ground examinations.

## TALLADEGA NATIONAL FOREST

### Oakmulgee District -

Two of 16 spots (13 percent) examined during the ground check were infested with southern pine beetle. However, 14 of 16 spots (88 percent) were initiated as a result of attack by this insect. The remaining two spots were initiated by lightning and subsequently attacked by black turpentine beetle.

The District removed 316,000 board feet of pine sawtimber and 6100 cubic feet of pulpwood through commercial sale during suppression efforts in Fiscal Year 1974. In addition, they chemically treated 735 stems of pine timber. Only four presuppression flights were conducted during this time period.

There is a possibility of increased beetle activity and pine timber damage during late summer 1974. The District should resume the performance of aerial presuppression surveys every three to four weeks. Southern pine beetle suppression should be conducted in accordance with FSM 5250 and the Southern Pine Beetle Project Control Plan for the National Forests in Alabama.

Table 1.--Summary of the results of a southern pine beetle evaluation conducted on the Oakmulgee District, Talladega National Forest, Alabama, June 1974.

| | Ownership Unit<br>Oakmulgee District, Talladega N. F. | |
|---|---|---|
| 1. Results compiled from data collected during the aerial phase of the evaluation: | | |
| Survey Type | Aerial Photo | 50% Aerial Sketch Map |
| Date of Survey | June 5 | June 19 |
| Total acreage Surveyed | 102,400 | 227,600 |
| Total susceptible host type | 217,600 | |
| Total number of spots within survey boundary | 594 | |
| Spots per M acres host type | 2.73 | |
| Average spot size (trees) | 1.62 | |
| Range of spot size (trees) | 1-23 | |
| Reds and faders per M acres host type | 4.43 | |
| 2. Results compiled from data collected during ground and aerial phases of the evaluation: | | |
| Date of ground phase | June 25 | |
| Infested trees per M acres host type | .77 | |
| Total number of infested trees | 168 | |
| Total volume of infested trees (board feet) | 19,320 | |
| Total number of affected trees[1/] | 1,161 | |
| Total volume of affected trees (board feet) | 133,515 | |
| Percent of spots infested | 13% | |
| Brood density | -- | |
| Infested green to infested red tree ratio | 0:4 | |

1/ Means attacked and/or killed.

Table 2.--Summary of the aerial survey data - southern pine beetle evaluation on the Oakmulgee District, Talladega National Forest, Alabama, June 1974 [1/].

| Ownership | Spot Size:Trees | | | | | | Average Multiple Tree Spot Size[2/] |
|---|---|---|---|---|---|---|---|
| | Singles | 2-5 Spots:Trees | 6-20 Spots:Trees | 21-50 Spots:Trees | 51+ Spots:Trees | Total Spots:Trees | |
| | 371 | 183:549 | 36:324 | 4:92 | 0 | 594:965 | 4.33 |

1/ Corrected according to Aldrich et al. (1958); expanded to 100 percent survey coverage.

2/ Single tree spots not included.

## RECOMMENDATIONS

We recommend that the Southern Pine Beetle Project on the Oakmulgee District be continued during the first half of Fiscal Year 1975.

Another evaluation will be conducted during August 1974. If summer population increases fail to materialize, we will recommend that the project be terminated for the second half of Fiscal Year 1975.

## REFERENCES

Aldrich, R. C., R. C. Heller and W. F. Bailey, 1958. Observation limits for aerial sketch mapping southern pine beetle damage in the southern Appalachians. Jour. of Forestry 56(3):200-203.